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FRONT COVER: Cows grazing last November a rich autumn pasture dressed with 2 cwt. of 'Nitro-Chalk' to the acre in September

OUR CONTRIBUTORS

ELIZABETH CARTER is secretary to the Chief Accountant at Wilton Works. Her article is the winner of our competition for articles on holidays abroad.

KEVIN FITZGERALD is in charge of publicity and public relations for Central Agricultural Control and Plant Protection. Previously he was head of our Dublin office. He is well known both as a broadcaster and writer of detective novels. His last novel is called *Quiet under the Sun*.

N. P. HARVEY does publicity work for Plant Protection. He is a keen gardener and not one of those who write about gardening without dirtying their hands. His book *The Rose in Britain*, published two years ago, has run into its third edition.

P. C. PRATT was Deputy Chief Technical Record Clerk at the Chance and Hunt Oldbury Works of General Chemicals Division until his retirement two months ago after 43 years' service. He has been actively interested in show-jumping for a long time and is one of the British Show Jumping Association judges.

Nearly as Much Meat as you Like

By Kevin FitzGerald (Central Agricultural Control)

Our Company can justly claim some credit for more plentiful meat. It is a story going back to 1928, when research on nitrogen for crops and grass was first begun—a story culminating in today's established farming practice to use phosphate of ammonia or 'Nitro-Chalk' for stimulating early and late grazing. All this means more livestock to the acre and more food for Britain.

IT is an interesting thought that, until the summer of 1953, hundreds of thousands of men and women around twenty years of age had never seen a reasonably sized joint of meat put on the table in their own homes. To these, the motif appearing on the windows of butchers' shops "Anyone Served" must have appeared, to say the least of it, surprising.

All their lives the butcher had been to them a much-harassed, disagreeable individual to whom their mother bent the knee and endeavoured to placate with fair words while she tried to procure in exchange for little pieces of paper something more than eightpence worth of skin and bone for each member of the family. These young men and women now meet for the first time the butcher as their parents first knew him when newly married—a cheerful soul, slapping great sirloins with a spotless hand and saying "What about a nice chump chop for the old man when he gets home this evening?"

After a few weeks of this, people ceased snapping and snarling at each other in trains, buses and the London

Tube. However revolting the phrase may sound, there is nothing like a bit of meat when it comes to putting up with the horrors of the British climate throughout an average year. It is a reasonably safe bet that however



Meat in plenty, 100 years ago

severe the winter of 1953-4 may prove to be, the incidence of that well-known British institution, the perpetual sneezing cold, will be markedly less. For the past fifteen years we have had in this country to rely very largely upon what the chairman of Central Agricultural Control once described as frozen favours from foreigners. We became used to the sausage which either exploded or melted away in the pan. We became used to blue meat stamped all over with blue marks indicating various countries of origin. It became possible to develop a passable knowledge of South American Spanish through close application to the mysteries carried home from the butcher's shop wrapped in a pin-up girl from a last year's *Daily Mirror*. The word *frigorifico* passed into the language. Fish became popular, and the horse, donkey, mule and goat populations of Great Britain dwindled alarmingly. Cats recoiled from the sweepings of the charnel-houses put up for them in attractively labelled tins. There are many reasons for the happier state of affairs in which we now find ourselves with regard to food. Hardly any of these reasons are political, although it is only fair to

say that for the first time in our history we find ourselves with a cabinet minister (the Minister of Food), who has the declared intention of doing himself out of a job at the earliest possible moment: all of us could name others in all the parties whom we would desire to see pursuing the same disinterested course. But the production of meat, and indeed the production of everything by which we live, is the work of the farmer, and it is to the British farmer that we owe in the main the long period of freedom from meat control which we enjoyed throughout last summer.

It is not often advisable—indeed, it is seldom desirable—that we in I.C.I. should seek any credit for our part in great national movements. Nevertheless thousands of men and women in I.C.I. contributed to the situation whereby, for a few months and with every prospect for the future, the whole country was better fed. Surely they may take justifiable pride in that.

The story is complicated, and it begins a long time ago. It began in fact at Jealott's Hill Research Station in 1928. In those days—this is a broad generalization, but it will serve—farmers looked to their cultivated land for profit and sustained their dairy or beef herds on impoverished grassland by gigantic importations of animal feeding-stuffs. It will, of course, be understood that these feeding-stuffs were augmented by the hay, roots, straw and grains, or some part of those crops, which the farmer grew on his arable land.



The empty shelves of strict rationing days

In 1928, inspired naturally enough by other workers in the same field (Sir George Stapleton, Professor Wood at Cambridge, Mr. William Davies and Dr. Woodward), the men at Jealott's Hill began to look at grass in terms of an important crop. They knew the first maxim of farming, which is to grow a field full of whatever you are growing, and they began to measure, by cutting, the total weight of grass which any given acre of a grass field might produce in any given year.

They were surprised at the sheer weight of the crop. They began to analyse grass—it had been done thousands and thousands of times before—and they began to compare the protein and carbohydrate in grass with the protein and carbohydrate in animal feeding-stuffs. It was at once apparent that the feeding value of grass, even comparatively poor grass, had been consistently undervalued

for many years. It should perhaps be emphasised at this point that few research workers in any field make discoveries on their own, and that even the bare facts so far stated could be amended in scores of directions. The main picture is, however, valid.

Given that grass was a heavy yielder and a valuable feeding-stuff, the next stages were to increase those yields, to increase the feeding values of them, and to manipulate the grass so that it yielded the highest possible tonnage of maximum value at the right time of the year. The science—because it is now an applied science—of grassland management had been born.

At first, as is always the case in these matters, success appeared to be just round the corner; but it was not. It was discovered that certain pastures, properly drained, correctly limed and then reasonably manured, would, if treated with nitrogen in the very early spring, produce a large volume of high-protein grass a month earlier than the normal time for any given district. But farmers in those days were shy of using nitrogen on grassland. They said it was like pouring a bottle of whisky into an empty stomach—a moment of exaltation to be followed by a long period of hangover.

In 1930 the long fight to break down prejudice against the use of nitrogen on grass began. It had to begin with a restatement

of first principles, that nitrogen on ill-drained, impoverished grass was wasted nitrogen and wasted money. While this educational process was going on in lecture halls, in village schools, in local cinemas, in market-places, and above all on the farms themselves, research into grass as a crop never slackened.

It was found that by careful management a farmer could maintain his herd at a high level of production and still have large quantities of grass left over which could be preserved for the winter as ensilage, as high-protein hay, or as artificially dried grass. The latter, made from grass cut at the right stage of growth and with its protein content built up by careful applications of nitrogen, was found to be superior to the very finest of imported feeding-stuffs. So too was the silage. But here there were many years of prejudice and very great technical difficulties to be overcome before the manufacture of silage could be established as a commonplace of the countryside.

By the outbreak of war in 1939 the position was something like this. The use by farmers of early grass had been more or less incorporated into standard farming practice. The work of Sir George Stapleton and others had popularised the establishment of the temporary ley—that is a field ploughed, sown to grasses and clovers of short life but high yielding capacity, utilised to the utmost for one or perhaps two years and then ploughed up again and brought into the normal farming rotation. This system fitted well with the food production drive of the early war years, during which land that had not seen the plough for fifty—and in some cases as much as a hundred—years was brought under cultivation.

The stimulus of war enabled schemes to be undertaken which had been shelved for generations. Huge areas of unusable land on the borders of the fen country were drained and put back into service. Tracts of marsh reclaimed from the sea were heavily limed, rigorously cultivated, and sown to productive crops. Prices soared, and farmers were once more in a financial position to look after their holdings.

The war at sea brought to an end the unlimited importations of animal feeding-stuffs. Farmers were compelled by necessity to make huge tonnages of grass silage to maintain their herds over the winter months.

The silage campaigns of 1941 and 1942, which were run by I.C.I. under the aegis of the Ministry of Agriculture and Fisheries, produced over a million tons of grass silage in the first year and a far greater tonnage in the second, but in those days it was thought that high-protein silage needed to be made in a small thirty-ton container with the addition of molasses to control acidity. It was only towards the end of the war that incessant research established that silage, every bit as good as that made in containers, could be made in rough pits dug out by tractor scoops or the ordinary labour of the farm.

Once this stage had been reached the manufacture of



1953—a lively trade in Christmas dinners in the East End of London

grass silage took its place with the production of early grass as a normal activity of the farm. By this time it had been established that not only would nitrogen produce grass a month earlier in the spring, but that its use would prolong growth for a fortnight or three weeks into the late autumn, in other words, by the end of the war the grazing season on thousands of farms all over the British Isles had been extended by two months.

One other discovery was necessary before the proper management of grassland could spread from the highest grades of intelligent farmers right down through the industry to the bottom. This was not long in coming. It will be obvious even to non-farmers that cattle ranging about over a big field, picking and choosing where they will, are going to waste a lot of grass.

(Continued on page 76)

PLASTICS REPRESENTATIVE

MOST people know that I.C.I. products are not sold by a man who wedges his foot in the back door and says "Good morning, madam. Can I interest you in some of our polytetrafluoroethylene today?" But how are they sold?

"It would take you six months to find out," they told me at Northern Sales Region headquarters. "If you want a very rough idea, spend a day with Jim Tierney. He's our expert on polythene and p.v.c."

When he picked me up in his car, Tierney was apologetic. "I'm afraid you won't see much selling done," he said. "The fact is that at present most of our brands of polythene and p.v.c. are selling faster than the factories can make them. We have to ration our customers. And retaining their goodwill while you're doing that is ten times as difficult as out-and-out selling."

That this was true I heard at every factory we visited. "How's the p.v.c. situation? When can we have more polythene?" they asked.

What Tierney can supply in unlimited quantities is service. "Sales with service" is a proud boast of I.C.I., and it makes the representative's job a little like a doctor's. Just as patients will ring up a doctor at any time of the day or night, so customers will ring up Tierney at the oddest hours, Saturdays and Sundays not excepted, to ask for advice. Having taken part in the research that led to the discovery of polythene and been concerned with p.v.c. since it was first sold in this country, he can claim to know most of the answers. If a problem floors him, there is a pyramid of technical knowledge, based on the Technical Service Department of Plastics Division at Welwyn, to back him up.

"We're worried about this polythene extrusion," said the head technician at a large plastics works we visited. "It's rather a tricky section. The trouble is . . ." and he plunged into technicalities. We went to look at the extruder. Tierney explored the inside with eye and finger, peered up the barrel, measured this and that, looked at the temperature, studied the blueprints, and delivered his diagnosis.

"What you want there, Mr. Butterworth, is more length on the scroll. Now, if I were you . . ." Two hours later we left the laboratory, with promises of further help if it should be needed.

This is the kind of situation that faces Tierney several times a week. Polythene and p.v.c. are supplanting rubber with such rapidity in all kinds of applications, from hose-pipes to coal-mine conveyor belting, that new technical problems are always arising. Tierney has the free run of the laboratories and workshops of nearly all his customers, and perhaps the most difficult part of his job is to keep quiet about what he sees there. If news of one fabricator's process were

to reach the ears of a competitor the loss of confidence all round would cost I.C.I. a great deal in goodwill and orders for material.

This puts Tierney rather in the position of a father confessor. I have already compared him to a doctor, but the good representative is also something of an economist, a psychologist, a mechanic, and a master-of-all-trades who can bandy decibels, ohms, molecules and coefficients of expansion with the expert on his home ground.

Tierney the economist went into action at our next visit. This customer, who makes cables in staggering quantities, represents one of his past triumphs of salesmanship. It took Tierney years to win his confidence and obtain an order for p.v.c. Now he uses it, as well as polythene and nylon, in hundreds of tons to sheath cables for cars, aircraft, the armed services and telephone companies.

The price of rubber was down again, this customer pointed out. And in spite of his confidence in the technical advantages of 'Corvic' and 'Alkathene,' price was always the ruling factor.

Tierney gave him an appreciation of the future of rubber and plastics, quoting world markets, political trends in Asia, facts about the motor industry—the fruits of studying the mass of literature that awaits him at home every night. Prices are keen in this trade. Manufacturers are interested in half-pennies per pound and in value for their money. Tierney's job is to see that they get it, with as much free service as they want.

Tierney is received with sincere good will by the managers and buyers and technicians he sees. But he has to remember that I.C.I.'s competitors are also on the job. At one factory we visited, for example, the buyer threatened him, in the friendliest way possible, with the news that a competitor had offered larger quantities of better and cheaper p.v.c. than I.C.I. had offered.

It is Tierney's business to know as much as possible about our competitors' activities—their prices, quality and capacity—and if he is being bluffed he knows it. If the threat is genuine, he must meet it somehow. Here he is helped by the knowledge that any manufacturer who has ever had recourse to the technical service that goes with I.C.I. sales is unlikely to sacrifice this service for a matter of a farthing per pound.

It was half-past six and we were seventy miles from Tierney's home. When he got back, he told me, he would have to issue reports for the office, read over and file the previous day's reports, prepare the ground for the next day's visits, and digest a mountain of technical literature. When that was done the day's work would be finished—unless a customer rang him up.

M.J.D.



Information Notes

DU PONT AND I.C.I. DIVIDE INTERESTS

By R. J. Wait (American Department)

Over a year ago du Pont and I.C.I. were ordered by the American Courts to separate their joint manufacturing and trading interests. Here is an account of how this division has worked out in Brazil, Argentina and Canada.

IT is now over a year since final judgment was given in New York in the long-drawn-out lawsuit under which du Pont and I.C.I. were accused of conspiracy in restraint of trade under the Sherman Anti-Trust Act of 1890.

The I.C.I./du Pont Patents and Processes Agreement had already been terminated by agreement between the parties. The principal provisions laid down by the judge were in connection with compulsory licensing in the United States of patents and know-how for reasonable licensing fees and in connection with the defendants' mutual trading relations so as to ensure—so far as economic circumstances make this possible—fully competitive conditions as between I.C.I. and du Pont.

In addition, the judge ordered I.C.I. and du Pont to separate their joint manufacturing and trading interests in Canadian Industries Ltd., Duperial Brazil and Duperial Argentina (which includes its subsidiary Duperial Uruguay), either by one of them selling out to the other or one or both of them selling out to third parties. Alternatively, they might arrange to segregate their manufacturing and trading interests by physical division of manufacturing and other assets as between the two companies.

He ordered that any plans they might agree on were to be submitted to the court for approval within six months from the date of judgment. The judge did not, however, make a similar order in reference to Cia Brasileira de Cartuchos, the company making sporting ammunition which is jointly owned by I.C.I. and the Remington Arms Company, or in reference to Cia Sud-Americana de Explosivos, the explosives manufacturing company in Chile in which du Pont have the majority holding and I.C.I. the minority holding.

So far as the joint companies were concerned, I.C.I. and du Pont agreed that they would prefer the alternative of segregation to that of either of them divesting itself of its holdings, and they therefore appointed joint commissions to draw up the necessary plans.

Commissions proceeded to Brazil and Argentina in October 1952 and were able to reach a preliminary agreement for

Brazil by the middle of November and for Argentina by the end of November. The plans were formally submitted to the court in January 1953 and were approved in March 1953. The order authorising the segregation plans was actually signed in April 1953. The companies were expected to implement the plans within a year.

The legal segregation of I.C.I.'s and du Pont's interest in Duperial Brazil and Duperial Argentina took place on 30th September 1953. The effect is as follows.

Brazil. A new company has been formed by I.C.I., called Cia Imperial de Industrias Quimicas do Brasil. Duperial Brazil continues temporarily as a 100% du Pont company but will change its name in due course. The du Pont company takes over the explosives factory and the miscellaneous products section from the nitrocellulose products factory. This section is being transferred to the explosives factory.

I.C.I. Brazil takes over the nitrocellulose products factory, including the manufacture of leathercloth, thinners, lightning fasteners, smoke generators and 'Westropol' detergents. This factory will also take over the processing of pharmaceuticals from Laboratorio Farmaceutico Imperial. In addition, I.C.I. Brazil will retain the silicate of soda factory. Office space and warehouses are divided between the two companies on as equitable a basis as possible.

Argentina. The position in Argentina is a little different. Du Pont are taking over the whole of the Duperial Argentina holding in Ducilo, a company which produces rayon, nylon yarn and cellophane. This has made it possible for Duperial Argentina to be retained as such under the same name by I.C.I. together with Duperial Uruguay, which is a subsidiary of Duperial Argentina.

The Duperial Argentina manufacturing interests are sulphuric acid, alum, 'Gammexane' mixtures, P.F. moulding powders, hydrogen peroxide, synthetic finishes, carbon bisulphide and tartaric acid. I.C.I. will also take over Cartoucheria Orbea Argentina, which manufactures sporting shotgun and revolver ammunition, and the whole of Duperial's holding—

50%—in Electroclor, which manufactures anhydrous ammonia, caustic soda liquor, liquid chlorine, and a number of chlorine compounds. Duperial Uruguay, which also comes to I.C.I., manufactures phenothiazine and sodium hydrosulphide and manages Fabuca, another subsidiary of Duperial Argentina making shotgun ammunition in Uruguay.

The division of the assets of the South American companies calls for some financial adjustment between I.C.I. and du Pont so that each of them gets an equal value, and at the time of segregation small missions from both companies went to South America to reach agreement on the adjustments to be made. In both Brazil and Argentina I.C.I. will be making some payments to du Pont to adjust the balance between the two companies. This brings to an end a happy association between I.C.I. and du Pont in Brazil, Uruguay and Argentina, which has lasted in the case of Argentina from 1933 and in the case of Brazil from 1936.

Canada. In Canada progress has not been quite so rapid. The segregation of C.I.L. into two separate companies—one to be controlled by I.C.I. interests and the other by du Pont interests—proved a matter of considerable complexity, due to the size and nature of C.I.L.'s business, the existence of outside stockholders holding preference and common stock in C.I.L., and legal and taxation considerations. Certain plans were worked out by missions from I.C.I. and du Pont in September 1952 which it is hoped will, in the long run, prove the basis of an equitable settlement which all the stockholders of C.I.L. can properly endorse.

However, while the stockholders of C.I.L. have been advised that plans for the segregation of C.I.L. into two companies are under consideration and that the C.I.L. board will submit a final scheme for their approval in due course, the actual details of the proposed allocation of physical assets as between the two new companies have not yet been made public.

ANTIBIOTICS AS A FOOD FOR ANIMALS

By N. S. Grieve (Northern Region)

Last September it became legal to sell penicillin and other antibiotics for mixing with animal feeding-stuffs. No one yet quite understands the reasons for the remarkable effects of these minute quantities of antibiotics on pigs and poultry—particularly the runt of the litter—and the various theories on the subject are here discussed by an agricultural expert from Northern Region.

FIRST and foremost, what is an antibiotic? There are quite a few rather complex scientific definitions, but the general public will know them by their works. Perhaps the best known are penicillin, aureomycin, streptomycin and terramycin. They are usually derived from mould growths and have the property of destroying certain types of harmful organisms which cause disease in the human or animal systems. Their importance in medicine cannot be overestimated, and many hitherto incurable diseases now yield to their curative properties.

Some five years ago the Americans discovered, quite by accident, that very small quantities of some of these antibiotics incorporated in animal foods greatly increased their efficiency. Animals so fed matured, from the point of view of weight, much earlier. The mortality rate in piglets was also decreased—a very significant point, for a dead piglet will never make bacon! So far it is probably true to say that the case has been proved only for pigs and poultry. It is important for farmers to realise that antibiotic-fortified food should not be used for breeding stock or for ruminants. Moreover, let it be said at once that none

of the antibiotics influence egg production—at least to any notable degree. In short, their interest to the farmer lies in the fact that they are efficient aids to flesh formation.

In the United States, where penicillin is largely used, a broiler (i.e. a table chicken weighing about 3½ lb.) is produced from ten to twelve weeks after hatching and a 225 lb. pig at 6½ months is commonplace. The average time for a fattening pig to achieve 200–240 lb. was lessened by 10–30 days through the use of antibiotics.

The most interesting and, perhaps, puzzling thing is that these results should have been achieved using only the minutest quantities of antibiotic. The official Ministry of Agriculture recommendation, in the case of fattening pigs, is that only four grammes of penicillin—a level dessertspoonful—should be used in one ton of feed. The practical-minded reader may well ask how it is possible to mix a level dessertspoonful of penicillin with a ton of food. The difficulty is overcome quite simply by the manufacturer premixing the required quantity of penicillin with ground chalk or other suitable diluting material. It then becomes quite simple for the compounder or farmer to add the required proportion of material.

It might also be asked how this small quantity is so effective in producing pork and table birds so quickly and cheaply. So far the answer is something of a mystery. There are various theories, but they are no more than theories. One is to the effect that this small quantity of penicillin suppresses "sub-clinical" disease, i.e. diseases that hitherto have escaped precise



... know them by their works ...

identification and which retard growth in the early stages, e.g. scours in young pigs, etc. Another theory is that the penicillin alters for the better the microflora of the intestines. In other words, it kills harmful organisms in the gut, and so the animal can make better use of its food. Be that as it may, suffice it to say that the penicillin works—the runt pig, in particular, is quickly transformed into a good “doer.” The effect is really marvellous.

As was to be expected, it has already been suggested that this use of antibiotics in feeding-stuffs has disadvantages. For example, it has been claimed that it causes the pig to put on an undue proportion of unwanted fat. Against this is the testimony of one of the largest meat packers in Chicago, who stated that in nearly four years of slaughtering antibiotic-fed animals they never saw an extra deposition of fat. In the research stations experience has been the same.

There is another school of thought which argues that the general use of antibiotics in animal feeding-stuffs will reduce the animal's resistance to disease. Very careful and competent observers have found no definite indication of either disease resistance diminishing or of any change in the distribution of diagnosable disease. Indeed, there seems every reason for

thinking that the use of antibiotics in this way results in nothing but good.

The question is sometimes asked whether one antibiotic is better than another for this particular purpose. Many experiments have been carried out, especially in the United States, in order to find an answer. By and large it can be said that one antibiotic is about as good as the other. In a county like Cheshire, which has a big stake in the agricultural prosperity of the country, it is not surprising that quite a number of progressive farmers have already tried penicillin as an addition to the ration of their pigs and have already satisfied themselves as to its worth.

However, as the permitted use of antibiotics in animal foods began only on 1st September 1953 (and it takes 6–7 months to produce a pig fit for slaughter), practical evidence and experience are still in the process of accumulation. Experience in the U.S.A. and experimental work in the United Kingdom make it clear that the British farmer now has at his command a potentially powerful weapon in the fight to provide more and perhaps cheaper bacon, pork and table fowls for the British housewife.



... results in nothing but good



... let it be said at once ...

MIXED BLESSINGS

Contributed by Metals Division

Non-ferrous alloys constitute an important part of the business of Metals Division, who are recognised as leaders in this field. Copper, a metal with many valuable characteristics, is an obliging and adaptable partner to other metals. This article indicates the benefits of the still expanding range of copper alloys.

IN one respect at least non-ferrous metals resemble certain other familiar commodities. There are times when they are to be preferred “neat,” others when they can be improved by the addition of carefully selected associates. In the metal world the mixing process produces alloys.

The story of man's efforts to improve on nature in this way goes back almost as far as the history of metal itself, though one of the first known alloys—bronze—was almost certainly produced naturally, by the chance combination of copper and tin in a form suitable for making weapons and tools. Later, when our ancestors learned to separate metallic elements from the rock-like ore in which they were generally concealed, they found that copper by itself was considerably softer than the copper-tin mixture. So they began producing the first man-made alloys by melting together ores containing different metals.

The aim of giving added strength is still a vital reason for

mixing metals. In the non-ferrous industry, for example, one of the commonest metals used is copper. Although it has many excellent qualities, copper by itself is quite soft, so where it must withstand hard wear or severe conditions it needs the help of a stiffener. Often the alloying constituent chosen is zinc, which has the extra advantage of being considerably cheaper than copper. The mixture of copper and zinc makes brass, one of the best known non-ferrous metals in everyday use. Brasses suitable for many different applications can be made by varying the proportions of copper and zinc.

Sometimes, of course, materials are needed which must fulfil still more specific requirements. The metal used for, say, condenser tubes, which will obviously spend much of its working life in contact with water, must be exceptionally resistant to corrosion. Copper has this quality but would not be strong enough; the addition of zinc would supply the

strength, but brass is unfortunately less resistant to heavy corrosion attack.

Faced with this twofold problem, the tube manufacturer has two alternatives. He can either substitute for zinc another constituent with good corrosion resistance (nickel is one of the most satisfactory) or include a third metal (aluminium, perhaps) in the alloy. One specially durable tube alloy has no fewer than four major constituents—copper, nickel, iron and manganese.

Other reasons for alloying copper include increasing strength without materially reducing its high electrical conductivity (the addition of chromium has this effect), improving its machinability (copper-zinc or copper-tellurium alloys are often used when high-speed machining is called for) or producing an attractive colour (such as an alloy of copper, zinc and manganese called “chocolate bronze,” which is particularly suitable for decorative metal-work).

Some copper alloys are in very common use yet pass unrecognised as such. Today our so-called “copper” coins are made of an alloy containing copper, zinc and tin and our “silver” coins of a copper-nickel alloy; the “nickel-silver” used for so many fabricated goods contains no silver, only copper, nickel and zinc. Even certain types of 18-carat gold contain a percentage of copper!

What might be called the Bronze Age way of producing alloys—by melting down the mixed ores—is naturally not accurate enough for all the precisely defined compositions in use today. So nowadays the general practice is to use metals already separated from the ore and mix them in the molten state in the furnace. The ingredients of the mixture, which are of course very carefully weighed before they go into the casting furnace, take two forms—virgin metal (usually in the shape of ingots or bars) and process scrap. If scrap is used, great care must be taken to make sure that it is free from contamination, for even particles of extraneous metal can cause serious weakness in the cast alloy. When both or all the constituent metals are completely dissolved, the mixture is poured into moulds and allowed to solidify.

The technique of measuring out ingredients (known as heat weighing) deserves perhaps more than a passing reference, for, of course, it is not just a question of putting together so many pounds of each metal. Allowance must be made for impurities which may be present and for losses due to metal being dissipated in vapour from the furnace (zinc, for instance, may be reduced by as much as 2% in the heating process). When scrap is used, account must be taken of the varying proportions of constituents and impurities in the processed metal. To achieve from so many variables an alloy which must contain final precise proportions seems to the uninitiated quite a mathematical achievement, though experienced heat weighers carry it out with enviable ease.



... needs the help of a stiffener

Two more points have to be watched. The first is the fundamental principle that (with one or two special exceptions) only metals which will dissolve completely in each other can be used to make good alloys. Some pairs of metals do not behave like this. Aluminium and lead, for instance, have no co-operative instincts; they remain as obstinately divorced as oil and water and solidify into two distinct layers, with the aluminium lying on top of the heavier lead.

The second also arises from an unalterable physical law—the fact that metals melt at different temperatures. For instance, copper melts at 1083° C. while zinc melts at 419° and boils at 907°, so if the two were heated at the same time, the zinc would boil away before the copper had melted. This difficulty is overcome by first dissolving the metal which melts at the higher temperature; the other contents can then be added and will dissolve quickly before too much has boiled away.

An even more troublesome snag arises when the principal ingredient melts at a lower temperature than the subsidiary metal. The melting point of aluminium, for instance, is not much above half that of copper; if an alloy of 92% aluminium and 8% copper is wanted, it would clearly not be reasonable to expect the small amount of molten copper to absorb nearly twelve times its own weight of aluminium. So here a different technique is employed, the job being done in two stages and the requisite mixture produced with the help of an intermediate “hardener alloy.”

A curious fact about alloys is that sometimes they contradict all the natural laws of heredity. So, two weak or soft metals together may produce a strong alloy with properties strikingly different from those of either of the parent metals. Copper and aluminium, for example, are both fairly weak. But if a small proportion of aluminium is added to copper, the result—an “aluminium-bronze” alloy—is far stronger than copper. Unfortunately, the extent to which we can utilise this characteristic is strictly limited; if amounts of aluminium beyond



... carry it out with enviable ease

10% are added, the alloy quickly reaches a point when it is so brittle as to be quite valueless commercially. Copper-nickel alloys, on the other hand, are useful throughout almost the whole range of possible ratios.

Over recent years, two factors have helped to extend with great rapidity the already large range of commercial alloys—first, the ever more exacting demands made on fabricated equipment by the accelerated speeds and pressures coming into use (particularly in industry and in transport applications); second, the important advances in the scope and accuracy of research equipment available. The non-ferrous industry aims not only at keeping pace with the needs of its customers but, where possible, at anticipating them.

In this objective it is undoubtedly helped enormously by the obliging versatility of its principal raw material, copper.

SWITZERLAND'S AMAZING RAILWAYS

So numerous are the railway enthusiasts in the Company that no apology is made for giving space to yet another railway book. Switzerland's Amazing Railways (Nelson, 25s.) is here reviewed by Mr. Henry Maxwell, head of Internal Relations Section at Head Office.

"My desire in compiling this book," writes Mr. Allen, "was to pay my tribute to a country which I have known for over forty years and love well." The tribute which follows, in the form of a volume of some 180 beautifully printed and illustrated pages, must be as unique as it is felicitous.

Certainly not the least of Switzerland's marvels are her railways. Whether of the standard gauge as part of the trunk routes of Europe, or of the narrow gauge feeder lines which wind their ways up and down the steep valleys, or of the rack and pinion tracks which scale the mountain summits, the adjective *amazing* is not only applicable but inevitable. But only, perhaps, one holding the unique position which Mr. Cecil J. Allen commands in the field of railway literature—one who by his balanced criticism and appreciation has not only faithfully chronicled contemporary locomotive performance over a whole generation but has enriched the experience of countless thousands of his readers—could have dealt with the subject so adequately.

The book itself, as might be expected of Mr. Allen, lacks nothing which can contribute to the reader's enjoyment and understanding: maps, tables, logs, index—all are impeccable.

For the purposes of his survey Mr. Allen begins with a general and brilliantly informative introduction to the political and geographical antecedents of the present railway system in Switzerland and then proceeds to illustrate what railroading in a country of the nature of Switzerland really means; the railway conquest of the Alps, the battle with snow and ice, etc. Space does not permit detail, but suffice it that here is Mr. Allen at his well-loved best, critical, perceptive, enthusiastic and revealing, with a traveller's eye that embraces everything from the crossing of the Lake of Lucerne by the Gotthard express upon the remains of a glacial moraine to the crispness of the rolls in the breakfast car on the Lötschberg.

The photographic reproductions are magnificent. Particularly memorable are the superb views of the three levels of the Lötschberg railway near Felsenburg Castle (plate 25) and of the entry to the Lötschberg tunnel (plate 27), together with the series of pictures depicting the fabulous railway ascent of the Jungfrau. Noteworthy too, but for a different reason, is the photograph of the tunnel named after Queen Victoria on account of a fancied resemblance in the rock face to the countenance of departed Majesty.

NEARLY AS MUCH MEAT AS YOU LIKE (continued from page 69)

Most people have seen sheep on roots or kale or lucerne confined to what they would eat in a day by a line of hurdles. The labour of making and moving hurdles was always considerable and in these days of high prices cannot be contemplated except in the case of high-quality pedigree flocks; but it was research based on the practice of hurdling sheep which gave birth to the idea of the electric fence.

This is a single strand of wire on light, easily moved insulated posts which is kept live by a twelve-volt battery. Any animal touching the wire receives not an electric shock in any real sense of the word, but a sharp sting. No animal will face the wire twice.

There was no idea in the minds of the inventors that the electric fence would be entirely suitable for sheep; it was heavy cattle on grass which they had in mind and for which it has proved revolutionary. There are thousands and thousands of electric fences in Great Britain today, and by means of this simple device the grazing of cattle, and thus the grass itself, may be controlled. It was the perfecting of the electric fence which has made possible the growing utilisation—and, more important, a growing realisation of potential—on British grasslands today.

Enough has been said, it is hoped, to give a general idea—and it is only a general idea—of what is going on in Great Britain in the production of food from grass.

Already, it is hoped, the reader begins to see why meat was more plentiful last summer and why it will be possible to

abolish meat rationing altogether next June. Naturally much of the story has not been told: the farmer must be paid for his work and for the comparatively high cost of grassland management.

There will still have to be large importations of meat from abroad, and in a hungry world the quantity available for import may diminish. Freedom from meat rationing may not mean vast arrays of delectable joints in every butcher's shop through the country, but there should be enough; and it should not be too expensive for the poorest wage-earner to have at least the certainty of a good old-fashioned joint of beef on the table at midday each Sunday. That is the old British tradition; it is towards that desirable end that all this work is bent.

There are, however, certain snags which should discourage undue optimism. There is too much calf slaughter going on still, despite the fact that a newly born calf of almost any breed is worth something like £15. There is a reluctance on the part of farmers to make the three- to four-year plan which is necessary in the production of beef; they prefer the monthly cheque from the Milk Marketing Board, and the country is flooded with milk. It is easier, although vastly more expensive, to buy feeding-stuffs than to conserve grass for the winter.

In addition, all farmers are not good farmers. Some of them, as in other walks of life, are content to live from hand to mouth; they do not wish to be bothered by the problems of management. But all this having been said, there remains a delightful prospect before us all which is—"Nearly as much meat as you like."

Irises For All

By N. P. Harvey (Plant Protection)

The iris is a flower of exceptional beauty, of an immense colour range, and according to variety it will bloom throughout the winter to late June. There are irises to suit every soil, and they are worth a place in every garden.

(Colour photographs by Ivor Ashmore)

MANY people are quite unaware of the wide range of irises that can be grown with comparatively little trouble in a small garden. To some, irises begin and end with the well-known blue and purple flags which invariably flourish almost anywhere despite neglect. Why bother, they say, with a plant that blooms only once a year for a mere two or three weeks and is disappointing as a cut flower?

I can assure you that these criticisms are very largely untrue.

Firstly, there are the flag or tall bearded irises, as they are called nowadays. By selecting early, mid-season and late-flowering varieties, a succession of bloom is possible from mid-May or even earlier to late June, thereby bridging the gap between the tulips and the first crop of roses. The colour range is immense. It has widened considerably in recent years to include blackish purple, chestnut, orchid-pink, flesh-pink, orange-yellow, cinnamon-brown and various shades of deep red.

There are numerous other irises, equally suitable for the amateur gardener. The winter-flowering *Iris unguicularis* (stylosa), which provides a more or less continuous supply of lavender-blue flowers from November to March; the violet-scented *Iris reticulata*, a bulbous species which comes with the crocuses, in violet, reddish purple or blue; *Iris japonica*, bearing fringed blooms, lilac with an orange crest; the golden yellow *Iris innominata* which blooms in June and prefers a moist, shady position; the flat, clematis-flowered varieties of *Iris Kaempferi* for a lime-free, damp soil; the blue, purple, white and red forms of *Iris sibirica*, again for a site which does not dry out too easily.

Lastly, there are the popular Dutch and Spanish irises flowering simultaneously with the first flush of roses.

These are a mere handful of the many distinct types that deserve a place in any garden, some admittedly difficult and probably best reserved for those who are anxious to specialise.

To return to the tall bearded irises. They possess many advantages, especially for the small garden. They are drought-resisting, tolerating and even enjoying bone-dry land, hardy in the extreme and will flourish in or near industrial towns.

Notwithstanding the remarkable adaptability of these tall bearded irises, there are two fundamentals without which success is problematical—perfect drainage and a sunny position. Slight shade will not matter unduly though results will be less pleasing, but dense shade must be avoided at all costs. They will flourish on most types of soil provided there are no worries about drainage.

Lime is necessary only on very acid soils and farmyard manure should be used only very sparingly, as it may encourage disease. The best plan is to dig deeply to at least eighteen inches. (Iris roots may penetrate even further when the plants are established.) Work in humus-forming material such as compost, peat and hop manure. Bonemeal or superphosphate of lime is also helpful. Though some iris roots may be found in the top two or three inches of soil, this does not imply that the plant absorbs all its nourishment through these roots.

If you have dug deeply and given reasonable soil preparation, your irises will be happier during prolonged drought. I have yet to be convinced that deep digging can be dispensed with for crops that naturally root deeply.

The planting hole should be wide enough for the roots to extend comfortably in all directions. Plant firmly, covering the roots with soil. The rhizome must rest on



IRIS CORDOVAN, an exceptionally beautiful new variety from America



IRIS INNOMINATA, delicate and difficult to grow but very lovely

the surface so that they receive the maximum air and sunlight (a rhizome is a creeping underground stem, usually woody, from which roots develop, foliage and flowering stems being produced from the apex; examples are lily of the valley and solomon's seal). A thorough summer baking makes all the difference to quality and quantity of bloom the following year. It is sometimes recommended that no loose earth should be left on the rhizomes, but whether they are exposed directly to the elements or partially covered matters little as long as they are not buried.

Rhizomes can be planted at least fifteen inches apart. This may seem excessive, but I can assure you from personal experience that if you are restricted for space and compelled to mix your varieties rather than plant in separate groups, one variety will soon run into another. When it comes to dividing the plants, mistakes may be made even with careful labelling beforehand. On a

flowers can be expected the first season, as the plants will hardly have time to recover from the shock of moving, particularly if a prolonged dry spell follows. If this seems likely, place the rhizomes in a box filled with moist peat or leaf-mould, which will encourage the production of fresh roots. Plant in the usual way a day or two later.

We now come to varieties. There is a very wide choice in almost every colour except pure red, and those given below comprise only a few of the many excellent varieties to be found in nursery catalogues. The following are good, inexpensive kinds, the majority well below 5s.

Blue Nile. Flax-blue with ruffled, vanilla-scented blooms.

Constance Meyer. Lilac-pink. Scented.

Gudrun. Huge, creamy white. Less tall than most varieties and probably best towards the front of the border.

Golden Majesty. Deep yellow.

Louvois. Brown and maroon. Scented.

Olakala. Orange-yellow.

light, warm soil irises increase rapidly, and it is surely preferable to have bare patches of soil than to be uncertain where one variety begins and another finishes.

Tall bearded irises increase rapidly, though some varieties take longer to make a big clump than others. They usually need dividing every third or fourth year, otherwise flower spikes will be fewer in number. Retain the healthiest rhizomes on the outside of the clump, replanting singly as desired. Old, worn-out rhizomes in the centre of the clump should be discarded and burnt.

There are three recognised times for moving tall bearded irises, whether from one part of the garden to another or when planting rhizomes from the nursery: late June when the plants have ceased blooming, throughout August and September, and in early spring.

Late June is probably the ideal time, as new roots are just starting to form and planting is accordingly less trouble. Early spring planting means that few if any

Prairie Sunset. Pink, apricot, copper and gold.

Redwyne. Deep mahogany-red.

Sable. Rich blue-black.

Senlac. Mulberry-red. Scented, extraordinarily free blooming and excellent for cutting.

Wabash. White and purple.

White City. Another white with well-branched stems. The very vigorous plant reaches 4 ft. and increases rapidly.

Among the latest and therefore more expensive varieties the American novelty *Cordovan* is a rich brownish red claimed to have "a glossy finish like a piece of finely textured cordovan leather." *Tobacco Road* is one of my favourites, a rich golden tobacco-brown. There are several new blues of real merit, notably *Blue Rhythm*, a large cornflower blue, and *Blue Valley*, a ruffled mid-blue. To describe the subtle differences in present-day blue varieties is practically impossible.

Iris unguicularis (stylosa) ought to be in every garden, large or small, as it blooms in winter when outdoor flowers are almost non-existent. In gardening, as in most walks of life, one rarely obtains cake and jam, and you might expect that a plant which blooms in the open in mid-winter would be the reverse of beautiful, or at any rate only moderately attractive; yet this iris is light and graceful, while the colour is supremely satisfying.

The *stylosa* iris is in no sense a connoisseur's plant, though it must have the right situation. A warm, sunny corner against the house, if possible facing south, is ideal. The soil should be poor and on the dry side, but a little mortar rubble may be worked in with advantage. It dislikes heavy clay and is less successful in the open garden, as the blooms are liable to be caught by the frost. In the Isle of Wight it can be planted right out in the open.

The scented lavender blooms appear at intervals from November to March and are admirable for cutting. The plants make a mass of long, leathery leaves which harbour slugs and snails. These pests are very fond of the *stylosa* iris, and the bulges between the foliage at the base of the plants, which are flowers in embryo, should always be watched and a metaldehyde preparation such as 'Abol' slug bait scattered round the clumps.

Dangers of Spring Planting

Textbooks and catalogues suggest either April or September as the best times for moving, but I find September preferable, as this iris must not be allowed to dry out for a month or two after planting. Spring planting means that the clumps may have to face drought and cold winds. Once established, the *stylosa* iris is drought-resistant. Some authorities advise cutting back the leaves to about half their length in June. This is supposed to let in air and sunlight, facilitating the ripening of the rhizomes and stimulating flower production.

The *stylosa* iris is ridiculously cheap—one clump with several shoots may be bought for half a crown. There is a white form, rather difficult to obtain nowadays, and a rich purple variety, *Iris unguicularis speciosa*, which does not bloom until March. Finally, have patience, as all forms of this iris need time to show their full beauty, and few if any blooms can be expected for at least eighteen months after transplanting.

The evergreen *Iris japonica Ledger's Variety* is said to prefer a moist situation, but in my experience it is happiest in the same situation as *Iris unguicularis*. Flowering in May, it is liable to suffer from spring frosts, but this is the only drawback. The flat blooms are white with an orange crest and crimped along the edges of the petals. On a light, warm soil it increases rapidly and continues in flower for many weeks.

More Winter Varieties

Among the bulbous irises, *Iris reticulata* and *Iris histriodes major* are unsurpassed and once again should be in every garden, as they flower in winter and are quite easy to grow. *Iris reticulata* (the name is derived from the netted tunic covering the bulb) grows six to eight inches high and is rich violet-purple with a prominent orange ridge. The leaves appear before the flowers, which come in February and withstand all but the hardest frosts. A light, rich soil suits this iris, and any shelter from east or north winds will be appreciated. There is a delightful pale blue form known as Cantab. *Iris histriodes major* is, if possible, even more beautiful. The large vivid blue flowers are usually a fortnight earlier than *Iris reticulata*, and the height seldom exceeds six inches.

The sudden appearance of this exotic flower, which almost bursts open if there is a glimpse of sun, can hardly fail to thrill the most blasé horticulturist. You can, of course, cover the blooms of both species with cloches to protect against bad weather, but this is far less exciting.

The Dutch irises bloom about the first week of June and can be planted in clumps in the herbaceous border, unlike the tall bearded kinds, which dislike competition. They should be lifted annually but are not fussy regarding soil. Good varieties include *Blue Champion* (excellent for cutting), *Mauve Queen* and *Princess Irene* (white and yellow). *Iris chaemiris* is a dwarf bearded iris available in various colours which make a bold display on the rockery in April. Most varieties increase quickly and need dividing every third year. Unfortunately they have a very short period of bloom.

Lastly, *Iris innominata* from Oregon, difficult but very rewarding. The apricot or orange-yellow blooms are freely borne on four-inch stems in June, provided you can give it a cool, semi-shaded spot with plenty of leaf-mould and peat in the soil.

Show Jumping

By P. C. Pratt (General Chemicals Division)

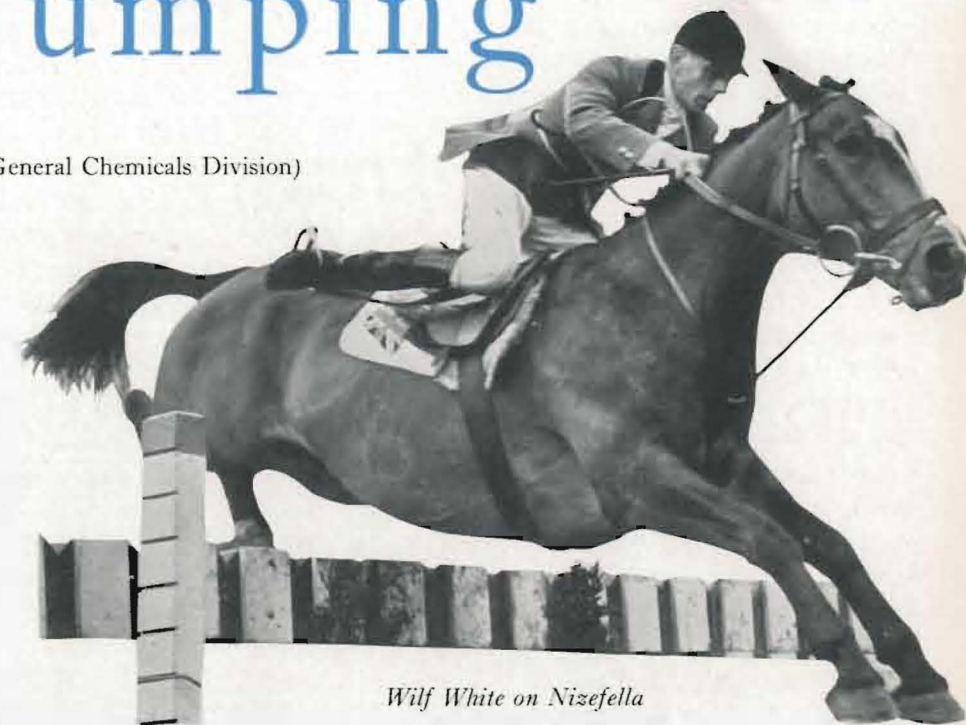
The story of a spectacle in which

Britain wins top honours and

whose ever-increasing popu-

larity has now led to the show-

jumping tote on the Continent.



Wilf White on Nizefella

SHOW jumping as we know it today is of comparatively recent growth. It is true that "horse-leaping" was practised at country cattle and agricultural shows at least as far back as the eighteenth century, but it was then little more than a contest between local farmers. Even as recently as the present century this sport remained a sideline, the fences being few and restricted as to type.

After the first world war its character gradually changed. The number of fences increased and their style grew more varied. In general, however, they remained straight up and down, with perhaps a water jump at the end. The only attributes a horse required for this kind of course were jumping ability and a quiet temperament.

The introduction of "spreads" brought more variety to what was becoming a somewhat monotonous performance, and with the growing influence of Continental methods the nature of show jumping altered still further. Finally, the "slats," or light wooden laths hitherto placed on all the fences to make complete clearance essential, were discarded and the fences strengthened, while the introduction of a time-limit necessitated a general speeding up.

The new methods called for a different type of horse. Balance and instant response to the rider's will became as important as power to jump and led to the introduction of the thoroughbred with its higher endowment of courage and brain.

It soon became obvious that some co-ordination of effort and rule must be reached if the jumping game were to maintain its position under the changing conditions. Thus was born the British Show Jumping Association,

which after a stormy beginning is now firmly established with a membership of four thousand, a thousand affiliated shows and a panel of expert judges covering every county.

The emergence of show jumping as a popular spectators' game is not so surprising as many suppose. The Briton is essentially a horse lover. It was the bareback cavalry and horsed chariots of Caractacus and Boadicea that caused so much trouble for the Romans; and ever since then, however much we may boast of our heritage the sea, it has been horses and horse breeding that have shaped our outlook. When to this natural bias are added the beauty and grace of the horse in action and, above all, in competitive action, the appeal becomes the more potent.

It is to be admitted, however, that the sport's popularity with the town dweller owes its recent great expansion to three new influences. First, the spectacular and highly significant success of our international jumping teams just at the time when our sporting prestige abroad was at its lowest. This success, culminating in the one gold medal earned at Helsinki, compelled recognition of the fact that show jumping as a world sport had arrived. Secondly, the interest in horses, and particularly in show jumping, shown by our young Queen and her family has set a worthy example which the British public is not slow to follow.

Lastly, the introduction to our larger shows of Continental jumping methods under the rules of the F.E.I. (International Equestrian Federation) tends towards speed and spectacle rather than towards the stylish and perhaps stylised methods rather unjustly referred to in some quarters as "flower-show jumping."

The result of all this increased interest has been curious. First, both the press and the B.B.C. (sound and vision) have been compelled to accord a quite unprecedented amount of publicity; secondly, the final test of popularity has been passed by the interest it has aroused in Big Business. It is safe to prophesy that, if our international successes continue, we shall have here in a few years' time the great area jumping contests, complete with totalisator, as they already have them on the Continent.

Show jumping will always be primarily a spectators' sport, as indeed is racing, whether with horse or motor; but what a spectacle it is! Not merely a momentary splash of colour as the field (or the car) goes by; but a full ninety seconds of breathless interest as horse and rider flash between the fences, both keyed to the height of controlled effort in a combination of speed and accuracy to be met with in no other sphere. At the final jump-off with the fences up to colossal heights and the clock ticking off the fatal seconds the excitement grows tense indeed. It only needs the added stimulant of the "tote" for the strain to become almost unbearable—and the appeal universal.

Beginner's Opportunity

Nevertheless, though it is true that this can never be a game in which everyone can indulge—even in the unlikely event of everyone wanting to—and is, indeed, in its higher flights a very highly skilled and specialised art, the average man or woman who is really keen need not despair of being able to take some part as performer. In these days, when nearly all towns and most villages run their own shows, local, radius and consolation classes are generally included in the programme together with "fault and out," pair jumping, and similar variations in which the height of the fences will not be excessive.

These shows are all run under British Show Jumping Association rules under which marking is on faults alone and not on time. It follows, therefore, that the riding school or privately owned horse "with a bit of a pop in him" need not disgrace his rider. Certainly, the more experience the rider gains and the more he uses his brain the more he will enjoy his round; but even he who enters just for the fun of the thing, and with little hope and less likelihood of winning, will gain vast enjoyment merely from being in the swim.

Riding schools are always ready to prepare a client for his first show, and the rest is mainly experience. Hire of a riding school horse for a show would run from about 30s., according to school and horse. The late Philip Turner once paid, it is said, £150 to ride a well-known jumper in the high jump at the International Horse Show.

For him who would take things seriously, here is a word of warning as to expense. The cost of one horse at livery in these days is from £5 to £7 a week, exclusive of

shoeing. To keep and look after it oneself could scarcely be achieved under £3. Few horses in these hard times win enough to cover showing expenses, for the prize list has not advanced in step with increased cost. Show money varies from about £50 at a small show to more than £1400 at the White City. The majority of competitors, of course, do not figure at all in the prize list.

Those horses that win consistently, if not the property of wealthy owners, are usually members of a string belonging to a dealer who expects to make his profit not in prizes but by the sale of made jumpers or promising novices. It is not unknown for a dealer to sell a good jumper to a poor rider who can make nothing of it and who finally, in disgust, sells it back to the same dealer for a song. The latter then "remakes" the horse, wins with it a few times in the show ring, and sells it again for a good price to another would-be showman. This may be repeated two or three times.

Now for a word of advice to the spectator. To get the best out of a jumping exhibition it is not enough merely to note whether a horse clears a fence or not. There is much more in it than this; and although no marks, good or bad, are awarded for style, it is of interest to notice the action and methods of each horse and rider.

Note the waste of energy of the not-so-good whose well-meant efforts to help the horse only result in impeding its movement. Observe, on the other hand, the stillness of the first-class rider whose movements correspond exactly to those of his mount, while the centre of gravity of both remains identical. Watch the approach; the manner in which the ace rider takes charge while the competent though less perfect man leaves the final decision to the horse. Mark the steady, unhurried collection of the horse on landing; or, alternatively, the unbalanced scramble that will unsettle it for the next fence.

Time-saving Devices

At the big shows, where the time factor is important, notice how the clever rider saves times by cutting corners or by speeding up between jumps—and how, sometimes, that very cleverness is his undoing by throwing the horse off its stride. See if you can spot the individual characteristics of a man or horse which distinguish them from all others. Well-known instances of both are the manner in which Tony Masserella permits the horse to throw him high in the air at each fence, and the typical heel-flick after every jump by Wilf White's Nizefella.

One word as to judging. This is often regarded as a rule-of-thumb matter in which the only requirement is to note whether the fence is knocked down by fore legs or hind. If this were all—and even this is not so easy as it looks—there would hardly be the need for B.S.J.A. care in selecting judges.



Col. Llewellyn on his famous champion Foxhunter

Far more is involved. It is not the enforcement of hard and fast rules that produces the difficulties but the instantaneous and correct decision on borderline cases. Was that a "turn" costing three faults, or was it only "nearly"? Was the assistance given to a rider permissible, or did it help in his round? Should this rider be eliminated and reported to the Association for improper use of the whip? Should another who starts his round before the judge has signalled be eliminated, as the rule requires, or be made to start again or even allowed to continue?

The problems that can arise are many and complex, and all must be judged and decided in an instant. Quick thinking and clear judgment—and, be it said, absolute fairness—are essential for everyone's comfort and for the good of the game.

No article on show jumping would be complete without some reference to the almost legendary Foxhunter and his talented owner.

I first saw Col. Llewellyn jump with the Warwickshire Yeomanry in Palestine, where, after winning the officers' competition in the regimental sports at Rosh Pina in 1940, he came fourth in the open at the Jerusalem horse show a year later, the very year in which Foxhunter was foaled. They came together six years later in what has been a true partnership, for Col. Llewellyn is the first to admit that although he has taught Foxhunter much, he himself has been taught not a little by that wise and clever animal. Col. Llewellyn's title for four years in succession as "Foremost Rider of Europe" (which means, in effect, world champion) is one which will not easily be equalled.



(Photograph by Charles Wormald, The Kynoch Press Studio)

T. H. MINTON

THOMAS HOSKER MINTON, Midland Regional Manager, has two unfair advantages over his colleagues which he never hesitates to use. When it comes to a difference of opinion he is ready to blind his opponent with science, and if that fails he draws on his thirty years' experience of selling chemicals. His qualifications to blind with science are unusual in the sales force—a first-class honours degree in chemistry, which he won at Manchester University in 1920, and an M.Sc. which he gained the following year by research.

His experience in selling chemicals would be hard to equal. He was in the foreign sales department of the United Alkali Company when the I.C.I. merger took place, and he joined the first Area Sales organisation of the new company. Based on the Manchester sales office, he tramped industrial Lancashire "on his own pins." Later he took over N.W. Division's special products section and was initiated into such mysteries as heat treatment, metal degreasing and sintering powders. By the time he was deputy Regional manager he had established

the reputation of knowing more about chemicals than anyone else in the north of England.

Minton's thirty years' service are only a modest part of a family achievement. His grandfather was manager of the United Alkali Company's Sullivan Works, and his father was chief engineer of the Muspratt Works. Other members of the family have worked for I.C.I., and all told the Mintons have achieved the remarkable total of nearly 350 years' service with the Company and its predecessors.

In his directness and energy Tom Minton is a typical northerner, but he has none of the "side" to which his experience might seem to entitle him. Somewhat heavily built, he used to be compared, as he bustled about the corridors of Ship Canal House on Saturday mornings, to an L.M.S. locomotive. He is blessed with an exceptionally retentive memory and to this day can demonstrate with the aid of cruet and cutlery the disposition of the Grand Fleet in the several North Sea engagements where he fought in a destroyer.

I.C.I. NEWS

NATURAL GAS FOUND IN YORKSHIRE

NATURAL gas has been found at a depth of 4800 feet with an exploratory borehole at Bird's Farm, Grosmont, Yorks, in which I.C.I. and the Anglo-Iranian Oil Company are jointly interested.

The first test is considered encouraging, but it is too early yet to assess the prospect of commercial production. The intention is that any gas found in sufficient quantity would be piped for use in I.C.I.'s Tees-side factories.

The borehole was drilled by I.C.I. as contractor to the d'Arcy Exploration Company, the prospecting subsidiary of



Ignited natural gas flares from an outlet pipe near the borehole at Grosmont, 20 miles south of Wilton

Anglo-Iranian. The d'Arcy Exploration Company holds a prospecting licence for the area, and originally discovered the existence of natural gas there with a borehole sunk at Eskdale in 1938-9.

Petroleum prospecting licences covering a large area of the North Riding of Yorkshire and County Durham have been taken out by I.C.I. in recent years.

I.C.I. ANSWERS NATIONALISATION CHALLENGE

A booklet setting forth the Company's considered views concerning the various proposals for the future of the chemical industry contained in the Labour Party pamphlet "Challenge to Britain" has been produced for the information of stockholders and employees of I.C.I.

This booklet is available, upon application through the usual channels, to the Company's employees. I.C.I. pensioners who wish to obtain a copy may do so by applying to the Company.

I.C.I. CATERERS MEET IN LONDON

Catering managers from I.C.I. works and offices all over the country met at Imperial Chemical House in London at the end of January for a two-day conference—the third of its kind to be held since the war.

One of the objects of the conference was to launch a new publication, *The I.C.I. Catering Manual*. Intended for the day-to-day general guidance of I.C.I. caterers, it contains more than 500 recipes, ranging from barley broth to meringues. Each recipe gives the quantities for 100 portions, and a companion volume of the catering manual gives the cost of each dish.

The book was compiled, with the help of caterers in many of the Divisions, by an editorial committee consisting of Messrs. W. J. Willmoth, R. L. Stinton, A. Surtees, M. T. Roberts and F. R. Noakes. The section on confectionery was largely the contribution of Metals and Nobel Divisions; and the catering manager of Plastics Division at Welwyn compiled and tested the sections dealing with butchery and larder work.

At the conference the caterers learned from Dr. A. J. Amor, chief medical officer, that I.C.I. has an enviable record in the matter of food hygiene. Ministry of Health statistics reveal that of the 3500 outbreaks or incidents of food poisoning reported in 1952 not one was traced to an I.C.I. canteen. During the year the canteens served 23 million beverages, 12½ million light meals, 7 million main meals, and ¼ million breakfasts.

Medals at Olympia

During their stay in London the I.C.I. caterers visited the Hotels and Catering Exhibition at Olympia. Among the exhibits were two tables of cold dishes which had been entered in the competition organised by the Salon Culinare International de Londres by I.C.I. canteens, and which had both won medals in their class.

A seven-piece cold buffet entered by a team of six from the Head Office Luncheon Club won a gold medal. The dishes included an entirely original one never attempted before,



Head Office Luncheon Club's prizewinning entry at Olympia

flowing. By the end of January all the boxes had been filled, emptied and re-filled many times.

The man behind the boxes, so to speak, is Mr. Fred Hanks, steward in the directors' dining room. For the past twenty years he has run a cripples' guild, and every year he packs up scores of boxes of used Christmas cards and sends them to the Star and Garter Home at Richmond, for conversion into calendars and new Christmas cards. Members of his guild are scattered all over the world, and Mr. Hanks corresponds with them and sends them magazines, newspapers and books at frequent intervals. In London he visits them in hospitals, and he counts many disabled ex-servicemen as close friends.



Mr. Fred Hanks

This is Mr. Hanks' 25th year as steward in the directors' dining room. If anyone can claim to be a Cockney it is he, for he was born well within the sound of Bow Bells at his parents' home near London Bridge. As a youngster he went to Australia and stayed there for fifteen years, working for part of the time at one of the leading hotels. He decided to work his passage home as a steward in the first-class saloon of a liner, but he liked the life so much that he stayed on board for six years, working back and forth from Australasia.

The next episode in the Hanks saga was a spell in the dining cars of the G.W.R. Then he went to work at "the best club in the world"—the Houses of Parliament. While he was there he heard that a rival establishment, Imperial Chemical House, was being built just up the road, and in 1929 he joined I.C.I. The date was April Fools' Day, but Mr. Hanks has survived the omen for a quarter of a century.

Tottenham Hotspur have an ardent supporter in Fred Hanks, who has watched all their home matches for many years. By way of contrast he is also a fan of the Old Vic, the Vic-Wells Ballet and the Promenade Concerts.

ALKALI DIVISION

"Outward Bound" Successes

Since 1950 the Alkali Division has sent some thirty lads to attend courses at the "Outward Bound" Mountain and Sea Schools. All these young men have received satisfactory reports on completing their month's course, but two of them have done exceptionally well, coming away with the silver badge that is attained by less than 2% of the boys attending the courses. To gain this highest award a boy must show outstanding proficiency and knowledge in all sections of the programme of practical work, athletics and expeditions.

C. O. Roberts won the first of these two silver badges for his prowess at the "Outward Bound" Mountain School in the autumn of 1950. He later left the Electrical Department at Winnington to serve in the Merchant Navy with the Canadian Pacific Steamship Company. He was a regular member of the I.C.I. (Alkali) F.C. first XI during their successful 1952-3 season.

The second silver badge was gained by W. H. Mainwaring,

an apprentice electrician in the Winnington Maintenance Department. He spent a month of last summer at the "Outward Bound" Sea School at Aberdovey on the Merionethshire coast. There, together with about 150 other boys, he learned from the seamen instructors how to handle a boat under oars and sail, how to use a compass and knots, and the elements of mountain and sea rescue. As well as learning how to launch the Aberdovey lifeboat Bill Mainwaring found himself appointed captain of the school's fire brigade, working in conjunction with the civic brigade. Although they did not have the opportunity to show their skill at extinguishing a real fire, they had numerous practices at all hours of the day.

At the end of the first week there were many aching muscles; but these soon became toughened, and Bill and his companions were able to take in their stride the daily 6.30 a.m. swim in the river Dovey, the walking, running, jumping, and throwing the javelin and putting the weight that comprised their programme of athletics.

Another regular feature of this character-developing course was the series of sea and land expeditions. A group of boys would be sent off with a compass (and no money) and told to get to a specified place and back again to the school within a specified time.

At first they took the school's cutter out with an instructor, but before the end of the course they were going out as a crew by themselves. During the latter part of the course, they went out for a two days' cruise in the *Warspite*—a vessel equipped with both engine and sails—manning the ship in true navy fashion.

Bill had the opportunity to meet boys not only from all over Britain, but also from Germany and Sweden who had come to Britain expressly to attend the course.

When he finishes his apprenticeship in eighteen months' time he may well spend his period of national service in the Navy, when the training that he received last summer will stand him in good stead. Like Chris Roberts, he is a keen footballer and has played well this season in the Warrington League team of the I.C.I. (Alkali) F.C.

Polythene and Television

A film unit of the B.B.C. television service visited Winnington and Wallerscot polythene plants in January to take shots of the manufacture of polythene for inclusion in a "Science in



A B.B.C. camera records the manufacture of polythene for a television programme

Industry" series. The team of eight, under the leadership of Mr. G. Johnson-Smith, the producer, filmed the entire process, from the research department stage to packing and loading the bags of polythene in the warehouse.

Sound was not forgotten: the sound-recording team caught all the noises peculiar to the making of polythene, from the rattle of the elevators to the whirr of the sewing-machines.

No professional actor was brought in, so quite a number of workers engaged on polythene production are looking forward to seeing themselves on television in the near future.

BILLINGHAM DIVISION

Rail Control by R/T

With the installation of radio-telephone sets in five of their locomotives Billingham becomes the second I.C.I. Division (the first was Alkali) to use radio-telephony to help control their railway system.

Billingham has 80 miles of rail track and an average movement of about 11,500 wagons a week. Hitherto the engines



Talking to Billingham locos by R/T

have been individually supervised by a chargehand in each area, but this led to duplication and lack of co-ordination.

Under the new system, instructions are issued direct to engine crews from a central office. Foremen and chargehands who used to be scattered about the factory now talk to the engine crews from this control room, and in addition three chargehands with walkie-talkie sets relay information from various parts of the rail system to the control room. A unique feature of the system is an indicator showing the 400 loading, discharging and stabling points in the factory.

The system will be used experimentally for three months. During this time data will be obtained to determine whether full-scale radio control of all locos and rail movement at Billingham is worth while. It will then be possible to decide whether to extend radio control to other vehicles such as mobile cranes.

British Fish for Rumania

For the first time housewives in Rumania have been able to have a change from salted fish and it has been made possible by the use of 'Drikold' from Billingham in special insulated rail vans.

Two hundred tons of white fish—mostly quick-frozen cod

called Quenelle de Turbot Nénuphar, and another in which a ship made of turkey bones sailed on a sea of garnished turkey.

The team consisted of Mr. A. Surtees (catering manager), Mr. M. T. Roberts (head chef), Mr. A. Richardson (second chef), Mrs. W. Berry (pastry cook), Mr. H. Turpie (larder cook), and Mr. G. Turner (sauce cook).

At the last exhibition, in 1952, a Head Office Luncheon Club entry in the same class also won a gold medal.

A bronze medal went to a team of four from Plastics Division, Welwyn, who had entered the competition for the first time. Headed by Mr. R. A. McCafferty, their catering manager, they were Mr. L. C. Andrews, Mr. R. Marriott and apprentice J. Knight.

MR. MAX BAKER

Many of the older generation in Nobel and Metals Divisions will remember that genial and dynamic personality, Max Baker. It is our sad duty to report his death on 3rd January, at the age of 82.

Mr. Baker was the originator and first editor of *The Shooters Year Book and Diary*, which he published for Curtis and Harvey Ltd. nearly fifty years ago and which is still being issued by I.C.I. to its sporting-ammunition customers.

But his main achievement was as shooting expert of *The Field* newspaper. Under his direction this paper ran a neutral and highly efficient testing range and laboratory for reporting on guns and cartridges; most enquiries were from readers, but the testing station was also made use of by gun and rifle makers when they sought an independent opinion. Mr. Baker also worked in close collaboration with the late F. W. Jones on the standardisation of lead and copper crushers for measuring pressures in shotgun and metallic ammunition.

HEAD OFFICE

A Use for Old Christmas Cards

The perennial problem of what to do with old Christmas cards was solved this year for Head Office people by the mysterious appearance on each floor of Imperial Chemical House of a cardboard box. Notices invited people to leave their cards in the boxes, and by mid-January all of them were over-

fillets—were sent 1500 miles across Europe by two Grimsby firms who co-operated to meet the order, the first to be placed in Britain by an east European country.

A number of technical problems were involved to ensure the delivery of the fish in a fresh state and advice was given on them by the technical sales service department at Billingham. At Grimsby the loading of the fish was supervised by a representative of the Bradford sales office.

The fish travelled in ten special wagons which were brought from France to Grimsby. In each wagon of ten tons of fish, twenty 25 lb. blocks of 'Drikold' were used—which called for about 2½ tons of 'Drikold' altogether.

The 1500-mile journey to Rumania took about five days, the wagons travelling by the Harwich-Zeebrugge ferry before beginning their overland journey to Rumania. This is said to be the first time that fish of any kind has been exported from Britain to an east European country.

The Nine Richardsons

The story of the four Postle brothers, who among them have completed 100 years' service at Billingham, was told in a recent issue of the *Magazine*. Since then other long service families have been discovered at Billingham: the five Mantle brothers, the four Days, and, most remarkable of all, the nine Richardsons.

Mr. Gilbert N. Richardson and his eight sons have completed no less than 118 years' service at Billingham or Wilton. Now 64 years old, Mr. Richardson senior has himself been at Billingham for 26 years and for the past 22 years has been a fitter in the Commercial Works Maintenance Section.

The eldest of his eight sons is also named Gilbert, and he has worked at Billingham almost as long as his father. Now 41 years old and a general worker in Gas and Power Works,



Mr. Richardson and five of his eight sons

he has been in Cassel Works, Casebourne Works and Commercial Works. Like each of his brothers, he has been in the forces, having served in Royal Navy motor torpedo-boats from 1942 to 1946.

The others are:

John. A general worker at Wilton for the past year, he is 37. He started at Billingham in 1933, and after working in Workshops and Oil Works he served in the Royal Navy from 1940

to 1946 as a radar operator. He returned to Billingham in 1946 and left the same year to go to another job.

Frank. Is 33 years old and has had 18 years' service. He started as a messenger, was in Distribution and Gas and Power Works, and is now on the Commercial Works butane filling station. Was an A.B. in the Royal Navy from 1940 to 1946 and served in an armed merchant cruiser.

Arthur. Employed in Oil Works as a process worker, he is 29 years old and has been at Billingham since he started as a messenger at the age of 14. Was in the Royal Navy for four years during the last war.

Roland. Twenty-seven years old, he worked at Billingham from early 1950 until last month, when he left to go to Wilton as a general worker on site maintenance.

Raymond. A fork-lift truck driver in Commercial Works, he also started at Billingham on leaving school and has had 10 years' service. He was in the Army Catering Corps for two years from 1947.

Harold. Recently returned from Korea, where he was a national serviceman with the Durham Light Infantry. Harold is a plumber at Wilton and is at present working on the construction of the phthalic anhydride plant. He was at Billingham from 1944 until he left in 1946 to begin an apprenticeship elsewhere and is 23.

Norman. He recently completed an apprenticeship at Billingham as an instrument artificer and is now on national service with the R.E.M.E. He is 21 and has had 5 years' service.

Mr. Richardson also has a daughter, Elsie, and she worked for I.C.I. until her marriage to Mr. J. Frankland, whom she met while both were working in Cassel Works.

Mr. F. S. Lundy

His many friends, and especially those who knew him in Brunner Mond days, will have heard with deep regret the news of the death of Frank Lundy.

Mr. Lundy was one of the group of engineers engaged and assembled by Mr. H. A. Humphrey and Capt. A. H. Cowap when Brunner Mond & Co. Ltd. decided to embark on a nitrogen-fixation project at Billingham just after the end of the first world war.

Frank Lundy brought enthusiasm, skill and knowledge to bear on the many difficult tasks associated with the starting up of the new project on the scale planned by the Brunner Mond directors. Working under very difficult conditions, first at Walsall and later at Runcorn, he was in charge of the erection of what turned out to be the first commercial ammonia-producing plant in the country. His colleagues speak most highly of his contribution to this stage of the Billingham project and in the words of one of them, Mr. A. T. S. Zealley, "Frank Lundy carried out a most difficult job magnificently."

Following the successful production of ammonia at Runcorn, Mr. Lundy moved to Billingham and was the engineer in charge of the ammonia section of the Billingham plant when it first produced ammonia on that now-famous Christmas Eve 1923. He remained associated with the engineering side of ammonia synthesis throughout the rest of his career, except for a period of 2½ years when he was attached to the Central Engineering staff at I.C.I. headquarters. In 1941 he left Billingham to become works engineer at the Dowlais factory and in the following year moved to a similar position at Prudhoe, where he remained until he retired in 1950.

DYESTUFFS DIVISION

Bound for the Caribbean

Last month Mr. J. L. M. Dadson, a 24-year-old chemist in the Rubber Service Department at Hexagon House, set off on a tour of the Caribbean. Travelling by air, he was to visit Barbados, Trinidad, Jamaica, Martinique and British Guiana, all in the space of six weeks.



Mr. J. L. M. Dadson

Mr. Dadson is one of twenty young men and women chosen by the South African Aid to Britain Fund to make this tour. They are all between the ages of 17 and 25 and were selected from candidates from all over the country for their ability to interpret what they will see to other young people on their return.

The tour will include visits to sugar plantations and factories, oil refineries, bauxite mines, timber works near the great forests of British Guiana, and the unique pitch lake in Trinidad; Mr. Dadson will also see the famous Kaieteur Falls in British Guiana and the flying fish fleet coming in at sunset in Barbados. To enable the members of the party to get to know the people of the countries visited and their way of life, they will stay in private homes rather than hotels wherever this is possible.

Mr. Dadson, who was educated at King Henry VIII School, Coventry, and Caius College, Cambridge, joined Dyestuffs Division in October 1952. He was delighted at the prospect of his tour overseas, and being a keen photographer hopes to bring home a pictorial record of the places he visits.

Best First-aider

Mr. T. E. Layton of Huddersfield Works, who won the open competition for the best first-aider in the Central Division of the St. John Ambulance Brigade, was presented with the Tyas Cup and replica on 17th December by the president of the division, Mr. H. Tyas. This was the first time that Mr.



Mr. Layton with Mr. Tyas and the Chief Constable of Huddersfield

Layton, who is a private in the Huddersfield corps, had taken part in the competition although he has been in the brigade only three years.

At Huddersfield Works, where he started 29 years ago, Mr. Layton is an ash crane driver in the boiler house. It was an accident in the house next to his own which started his interest in first aid. He has now been an ambulance worker in the factory for eight years, and a stalwart member of the Works first aid team for the last twelve months.

Mr. Layton, who is married and has a married son, has plenty to do in his spare time, for in addition to first aid work he takes an interest in gardening.

Grangemouth Men in B.B.C. Broadcast

Three people from Grangemouth Works, Mr. G. F. Bentley, Mr. A. Grenfell and Mr. A. Hunter, and the I.C.I. Grangemouth Recreation Club Silver Band, gave a good account of themselves in a recent broadcast in the Scottish Home Service about the life and industry of Grangemouth.

The Silver Band were making history for themselves when they played the march "O' a' the Airts" during the programme, for this was their first broadcast. Mr. Hunter talked briefly from the point of view of the process worker, and as chairman of the workers' representatives on the works council made a plea for the spread of the principle of joint consultation



Three Grangemouth broadcasters: Mr. Hunter, Mr. Bentley and Mr. Grenfell

as operated in Grangemouth Works. "I've seen for myself that the system works well in our place," said Mr. Hunter. "I believe that the same method could be applied in politics. Surely if joint consultation could be applied to world politics—which are in such a mess—only good could come from it."

Mr. Hunter is a process chargehand in one of the dyestuffs manufacturing plants. He is one of the best known footballers in the district, and when he played in goal for Falkirk he was a very hard man to beat.

Mr. Grenfell, who is a native of Grangemouth and a charge-hand joiner, spoke of his work in the factory and also of his connections with the local yacht club. The club is a very flourishing concern with sixty members and thirty boats, and last year Mr. Grenfell converted a lifeboat into a cabin cruiser for himself. He is still awaiting the better weather which will enable him to take his craft down the Forth.

Mr. Bentley is an Englishman who came to Grangemouth some three years ago. He is superintendent of the Pharmaceutical Warehouse, from which medicinal and veterinary products are sent out to all parts of the world. In the broadcast Mr. Bentley said his job gave him daily lessons in geography. At one time there might be in his warehouse packing-cases labelled for forty different destinations, ranging from Reykjavik and Helsinki to India, Syria, the Congo, Port of Spain, Fama-gusta, Damascus, Melbourne, Madras, Ecuador and Freetown.

Mr. Bentley, who was demobilised after the war with the rank of company sergeant-major, is a life member of the Royal Signals Association and is interested in local British Legion activities.

Dolls for Nylon Works Children

Some children of Nylon Works employees live too far from Billingham to be able to join the party which visits the pantomime each year. As compensation these children are given a



Miss Diana Vernon with dolls for daughters of Nylon Works employees

special present. The social committee gives a great deal of thought to these gifts, and one outcome of their enthusiasm can be seen in the picture above. The dolls which Miss Diana Vernon, daughter of Stores Manager Joe Vernon, is arranging were dressed by girls working in Nylon Works and went to the young daughters of employees. The social committee buys the dolls and the girls each volunteer to dress one.

GENERAL CHEMICALS DIVISION

Rail Deliveries to the Continent

The Division is now delivering several of its products to continental customers direct by rail from its works. A rail

tanker of methylene chloride, for example, despatched from Runcorn one Monday should arrive at a customer's siding in Basle, Switzerland, the following Monday, or at a factory in northern Italy in ten days.

Methylene chloride is only one of a number of products suitable for this method of delivery. Others are trichloroethylene, methyl chloride, chloroform and monochlorobenzene, and later this year it may be possible to send orthodichlorobenzene and 'Arcton' this way. So far, deliveries have been made to Belgium, Holland, Germany, Switzerland and Italy, and it is hoped to extend the trade to France, Denmark and Yugoslavia.

Consignments are usually sent by rail in bulk only if this method is cheaper than sending small packages; but sometimes customers on the continent will only order their chemicals from a firm which deliver consignments in rail tankwagons, which their works are already fitted to receive.

The wagons make the sea crossing to the continent in the train-ferry which operates between Harwich and Zeebrugge. At the moment the Division hires them from a continental firm, but soon it will take delivery of fifteen wagons which have been specially constructed in this country. They will conform to special international standards—longer wheel-base, larger loading gauge and compressed air braking are some of the ways in which they differ from the British—which will permit them to travel freely between continental countries.

Pensioner's Prize Chrysanthemums

Mr. Gilbert Densley, 71 years old this month, has been growing chrysanthemums for the best part of fifty years, but never has he enjoyed such success as he did last season.

At Weston super Mare chrysanthemum show he won three cups, six first prizes, two seconds and a National Chrysanthemum Society medal. At the Bath show he won first prizes with each of his two entries, and at Bristol two cups, eight first prizes, two seconds, and the N.C.S. certificate for the best vase of blooms in the show.

Mr. Densley, who retired from his work as a mason at Netham Works in 1942 after 45 years' service, is guided by the saying "When a thing is worth doing, it is worth doing well." He has no secret methods, but he advises beginners to be scrupulous in performing the various operations on their plants at the right times, and to keep notes of what they do and when they do it. He has the help of a son in his chrysanthemum growing, but does most of the work himself and finds that such an all-absorbing hobby is a great stand-by for retirement.



Mr. Densley with some of his trophies

LEATHERCLOTH DIVISION

First 50-year Worker

The honour of being the first of the Division's employees to achieve 50 years' service has fallen to Mr. E. Clayton, who works in the warehouse at Hyde.



Mr. E. Clayton

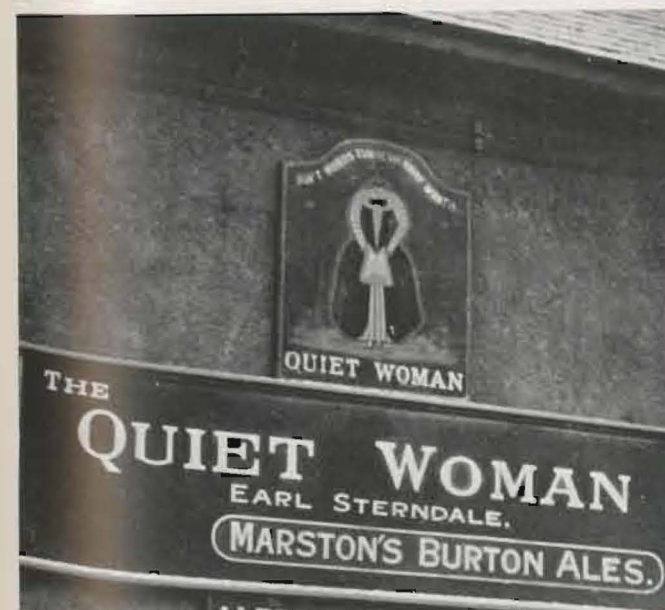
When Mr. Clayton joined the British Leathercloth Manufacturing Company (predecessor of Leathercloth Division) in 1903 he was put to writing out tickets and labels at a wage of 6s. a week. He wrote them in longhand, for there were no typewriters. When he reached the age of 21 he became a cloth examiner, and he has spent 42 years in that and other jobs in the warehouse.

Mr. Clayton remembers the dark days when the British Leathercloth Company was threatened with extinction by an expensive patents case. The workers held a mass meeting and decided to back their managing director, Mr. Hargreaves, to the hilt, no matter what the consequences to their pay should be. The Company emerged triumphant from the case, and Mr. Clayton went on to achieve his long service record.

LIME DIVISION

Quiet Woman exported to U.S.A.

New Yorkers, living in a city that has the reputation of being the noisiest, fastest and most up-to-the-minute in the world, can apparently still spare time to put their feet up and thumb through old copies of *Limestone Chippings* and its predecessor, *Lime Group News*.



A nagger who lost her head: The Quiet Woman at Earl Sterndale, near Buxton

Recently the Editor of the *Magazine* received a request from a New York publisher who was preparing a book about the role of women in American society. He had seen in an old copy of the *Magazine* an illustration of an inn sign which bore a picture of a headless woman and beneath it the name of the inn, The Quiet Woman. Could he borrow the picture?

There was no clue as to when or where the illustration had appeared. But the request was passed on to the *Magazine* correspondents in every Division, and a week later the Lime Division correspondent produced evidence of the thoroughness with which he had conducted his search. He had found the picture of The Quiet Woman—in the Lime Group news section of the *Magazine* for December 1936. The picture was sent to New York, and has now been used by the publisher.

The Quiet Woman sign still hangs outside the inn of that name in the village of Earl Sterndale, near Buxton in Derbyshire. Local history has it that the inn was so called because it was kept by a landlord whose wife was known as the "chattering chatteris." Her nagging was so persistent that he cut off her head; his own satisfaction at this act was only matched by that of the villagers, who subscribed to her tombstone and presented the landlord with a purse of silver.

METALS DIVISION

Gold Medallist

Miss Jean Farquharson, telephone and teleprinter operator at Fyffe & Co. Ltd., Dundee, was in the news a few months ago when she gained an award for elocution at the Edinburgh Festival. She has now succeeded in passing the final examinations of the London Society of Music and Dramatic Art and has been awarded the Society's gold medal.

Miss Farquharson trained locally and sat all her examinations externally. She has frequently recited at civic receptions and at various concerts in Dundee and district, and has also twice broadcast in Children's Hour.



Miss Jean Farquharson

In May the Under 21 Group was formed by seven singers and elocutionists. Miss Farquharson was a founder member of this group, which put on its first show at Dundee Art Galleries for charity. Over 400 people attended this concert, and the curator has placed the galleries at the Group's disposal for a further concert based on Elizabethan times and in full period costume.

NOBEL DIVISION

Prizewinning Modellers

A model locomotive made by Mr. R. Main (Instruments Section, Ardeer Trades Workshop) has won the supreme award at an exhibition organised by the Glasgow Society of Model Engineers.

The locomotive, a 3½ in.-to-the-foot scale model of an ex-L.M.S. class 5 mixed traffic type, took between 3500 and 4000 hours of Mr. Main's leisure to build, spread over a period of nearly five years. He did all the work at home, and had to use

*Ardeer's prizewinning model-makers*

his ingenuity to the full in solving the various problems of welding, brazing and metal manipulation generally.

Entries for the competition came from all over Scotland, and three other Nobel Division model-makers were among the prizewinners. Mr. A. Graham of Ardeer won third prize in the general class for a scale model of a Jaguar XK 120 car. Mr. John Bell, also from Ardeer, won second prize in the model aircraft section, and a tanker built by Mr. W. A. Graham of the Glasgow office was judged second best in its class.

PAINTS DIVISION

A Model of the Queen

In his spare time Mr. H. W. G. Bidgood, Division joint managing director, is among other things a model-maker who will spare himself no pains to achieve the effects he wants.

His latest model, of the Queen, is shown below. It stands 5½ in. high. Mr. Bidgood carved the bust and arms from wax, using photographs for reference, and then cast a plaster mould from the wax model. A polyester resin developed by Paints Division was used to obtain the final casting, which was then cleaned up and painted.



The robe and train are made of copper gauze, painted in the colours of the vestments worn by the Queen at her Coronation and embellished with "seed pearls" of minute glass beads. Her crown is made of brass foil and discarded jewels.

I.C.I. JAMAICA

Royal Acknowledgment



When the Queen and the Duke of Edinburgh visited Kingston, Jamaica, the staff of the I.C.I. office and their families had a grandstand view of the royal car. The landlord of the building had erected a wide stand for them on the office steps, and from there Mr. R. B. Kohring of the Dyestuffs Department took this picture of the Duke of Edinburgh acknowledging the greetings of the I.C.I. staff.

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Correction

In the Information Note "'Terylene' in Industry" in the February issue it was stated that after being heated for 168 hours at 50° C. 'Terylene' lost only 20% of its initial strength. This temperature should have been 150° C.

OUR NEXT ISSUE

The lead in April is a feature on the Vocational School run by Alkali Division at Winnington in Cheshire. This school takes in boys of school-leaving age and puts them through a six months' course aimed at selecting the best candidates for apprenticeship and process work and finding out to which trade a boy is best suited. Both photographs and article are by Norman Vigers, a Fleet Street cameraman with whose work readers are familiar.

Our colour feature concerns the unusual hobby of philately, or the collecting of matchbox labels. We are carrying two large illustrations of pages from Mr. Earnshaw's album, where he has collected over 10,000 matchbox labels from all over the world.

Next, Mr. P. C. Allen, chairman of 'Terylene' Council and Group Director for Plastics and Paints, recalls memories of Brooklands in pre-war days when such famous characters as Kenelm Lee-Guinness and Parry Thomas competed to establish new speed records; motor racing was then a rich man's hobby and the characters who drove none the less vivid for that. Lastly, Miss Daisy Grocock, who retired from Head Office about a year ago, writes a charming piece about school-days in Victorian and stricter times.

Beyond the Pyrenees

By Elizabeth Carter (Wilton Works)

SOUTH of the border and into sunny Spain—the land of gay caballeros, beautiful señoritas, fiesta, siesta and olive oil. Over that border I went, my passport in one hand and phrase-book in the other, with an almost maniacal determination after twelve months of scrimping and saving to enjoy every moment of my stay. There I found, in the Basque Province, the cares of the outside world are forgotten: today is to be enjoyed; tomorrow is never given a thought.

On reaching the hotel I made the necessary investigations. The bed was clean and free from livestock, the hot water tap emitted hot water, and down the corridor the plumbing arrangements were civilised. And so that hotel room with private footbath, its two balconies overlooking the Calle de Prim, became home for a fortnight.

San Sebastian, like many Spanish towns, has an old quarter which has gradually been surrounded by the modern buildings and wide boulevards of the twentieth century. The La Concha bay with its magnificent beach makes a pleasant picture, but to wander through the narrow streets of the old town is as if to turn back the clock a hundred years.

Here are tiny shops selling hams, savouries and pasties; small bodegas and cafés, during the day their only light being from the open door, where in the cool of the evening the men congregate to play cards and dominoes; and ever in the stagnant air hangs the smell of garlic and olive oil. Above the dark-eyed señoritas sit at their open windows as their little caged birds break the silence of siesta.

Siesta! The town sleeps as the sun reaches its zenith, but as if to make up for this unnatural quiet, about 5 o'clock bedlam opens wide its gates, and the noise has to be heard to be believed.

How those people love noise! Wallop! Bang! Crash! Bands, horns, voices, gramophones and radios all keep going at full blast. I remember once going to bed at 4 a.m., and the occupant of the room above continually moved heavy furniture for the rest of the night. Complain? "We make no noise during siesta—you sleep then," was the indignant reply. When in Rome . . .

*. . . the image of a bull . . . fireworks pouring from its head*

I had no idea what sort of reception Spaniards would give to English people, and frankly I was surprised that we were liked so well.

Let me give you a few of the instances I remember: the organist who proudly showed me his book of English songs and who blazed forth into the tune of "God Save the Queen" at the end of a wedding service (the congregation remained kneeling with the exception of one or two English people, who could not make up their minds whether to be pious or patriotic); the unceremonious digs in the shoulder, followed by "Engleesh miss? Me speak, please!"; the little girl who pushed a bunch of flowers into my arms as I walked through a small village; the accordionist who played "Roll Out the Barrel" when a crowd of us went into a little café in the old quarter.

The only criticism I heard was from a customs official when I asked if he had enjoyed his holiday in England. "Si, si, señorita," he said, "but the people in London, they stand on your foot, they say 'Sorry' and then they smile—they do not mean it, they are insincere!"

On the surface the Basques gave the impression of being rather reserved, but when I got to know them I found their happy, carefree mentality wholly disarming.

They are generous and warm-hearted people, and in their company—why, you cannot help but feel that it is good to be alive.

Spanish women are extremely charming, and their clothes and coiffures completely outmode the average Englishwoman. One custom is for single girls to make a promise to St. Antony to wear black until they marry. With great significance a Spaniard remarked "Of course, some women wear black all their lives!"

To see them at their best is when they are dancing and singing to the accompaniment of their scintillating castanets, and although in later life *avouirdupois* does take its toll, on the whole they are both elegant and attractive. One raven-headed siren, with a tiny pearl in each pierced ear, spoke volumes with her dark sultry eyes as she relaxed in the sun. She was in a pram and was, I should say, about twelve months old!

The language was a problem. Such phrases as "We are now passing over a viaduct" which featured in my little book were of little help, but after a few days I found that "How much is it? "Martini with Vermouth" and "Where is the Ladies'?" covered any eventuality. "The Engleesh," a Spaniard said to me, "always they ask for the cup of tea, always they ask for the toilet." Even the men who knew no other English had one stock phrase—"You are very bootiful!" One youth, however, had progressed further with his lessons. "Marry me, miss, yes please?" he shouted across the street: it is not without reason that the *duennas* keep a strict eye on their charges.

Not knowing the language I could not fully appreciate the custom whereby any man, be he of the nobility or a dustman, will whisper compliments to a girl as she passes in the street. Spanish women expect this, and if a new dress is not admired then its owner will probably go home in tears.

On one of my early ventures into the old part of the town I paused for a while to watch some boys playing the national ball game of Spain, *pelota*. The two English girls with me became somewhat alarmed at the obvious attention I was attracting from a group of tough-looking youths, and with the most casual air we could assume the three of us beat a hasty retreat. Later I discovered what they had found so fascinating—Spanish ladies do not smoke!

The Spaniards, essentially apartment dwellers, all seem to have outsize families, and they solve their "key

of the door" problem in an unusual way. The keys for all houses in a street are kept on a long chain by one man, and in order to attract his attention to come and open a door the occupants clap their hands.

To the uninitiated the sight of men and women, obviously sober, standing in the middle of the street at 3 a.m. clapping their hands is somewhat bewildering.

One evening as dusk was falling I came up from the beach, and on seeing large crowds gathering on the pavements I dashed up to see what was going on. Having read of the processions during Holy Week in Seville I was thrilled to find I was going to see something of the kind in San Sebastian. Hundreds of the town's citizens were in that procession, from the very young to the old.

Now any weak-willed visitor to places such as the Basque country, which has a deep historical background, usually end up by being dragged off to some sanctuary

or musty mausoleum when if the truth be known they would much rather stretch out on the beach and have a snooze. I fell into the trap and joined a party to visit the monastery of Loyola.

To me the elaborate gold ornamentation, old bones and bottles of blood were little short of depressing, but the monastery is worth a visit if only to see a little chapel whose walls are covered with exquisite mosaic in delicate pastel shades. I mention this visit to the monastery because to me it was dead, and in time to come I shall forget it. What I shall never forget is the sight of that procession as it wound its way round the town, bearing in its midst a *paso*, or holy image, of the Virgin, the light of the candles wavering slightly as the breeze caught them, creating moving shadows, which made the figure they surrounded almost ethereal.

As if from the sublime to the ridiculous, this float was followed by the Guardia Civil, brass bands, soldiers, and a man I assumed to be the mayor with his corporation, the mayor looking equally as embarrassed and uncomfortable as does his English counterpart on such occasions. This procession was a prelude to the four days of festivity which followed.

Fiesta! It was the fishermen's fiesta in San Sebastian. About 11 p.m. the crowds gathered by the thousand on the harbour and in the boulevards surrounding the bandstand in the town. The bands struck up with great gusto and the dancing began. The tightly packed crowds in the town



"Marry me, miss, yes please?"

swayed to modern dance music or dashed round in wide circles to the tune of Spanish folk-dances. The air soon became heavy with smoke from the cauldrons of boiling oil in which were cooked doughnut-like rings called *churros*.

About 1 a.m. we went down to the harbour to listen to the other band—and what a band! The players were all dressed in their best suits; the drummer was banging away like a steam engine as perspiration rolled down his ruddy face; equally the flageolet player was putting his heart and soul into the job; and the resultant noise was delightful. As I was whirled round in *paso doble* I heard some children excitedly shouting "*Toro! Toro!*—the bull!"

From my experience I think the best plan for an English visitor is to run as fast as possible at the mere mention of that word, but I, ignorant as I was of what was to come, went on with the dance. Suddenly a great roar rose as a man came diving into the crowds carrying on his back, pantomime fashion, the image of a bull, fireworks pouring from its head at a most alarming rate. The crowds scattered in his path and bodies went flying in all directions.

I recovered mine after it had been tossed from one end of the harbour to the other. My bruises were many, but worst fate of all—my nylons were in shreds. I discovered the explanation for this extraordinary ritual next day.

In a window were photographs of men being trampled on by full-grown bulls. Many of the men were injured, and it looked as if worse was to follow. What a tragedy, I thought. Tragedy my eye! Those men had gone to Pamplona on the day of a big *corrida* (bullfight) when the bulls were let out into the streets. Spaniards are superstitious, and to touch one of the bulls brings good luck.

Three times I went to the Plaza de Toros. The first time I saw the American baseball team, the Harlem Globetrotters, and having been once I plucked up sufficient courage to go and see a bullfight.

It was a *novillada*—in other words, a third-rate affair—and to compensate for the poor show three hams were given away. Our seats cost 25 pesetas (5s.), whereas at a

first-class fight they might cost anything up to two or three pounds. The four *novilleros* (apprentice matadors—matadors being the national heroes of Spain) were all young and good to look at, and the bulls, being babies of only two years, did not show much ferociousness.

The last bull, however, did catch the *novillero* unaware, and when the fight had finished the handsome youth walked round the ring acknowledging the applause of the crowds, with a bouquet in one hand, the other unsuccessfully covering his completely bare behind. Previously another *novillero* had tossed a bull's ear to his girl friend, the ear having been awarded to him by the president for a good kill.

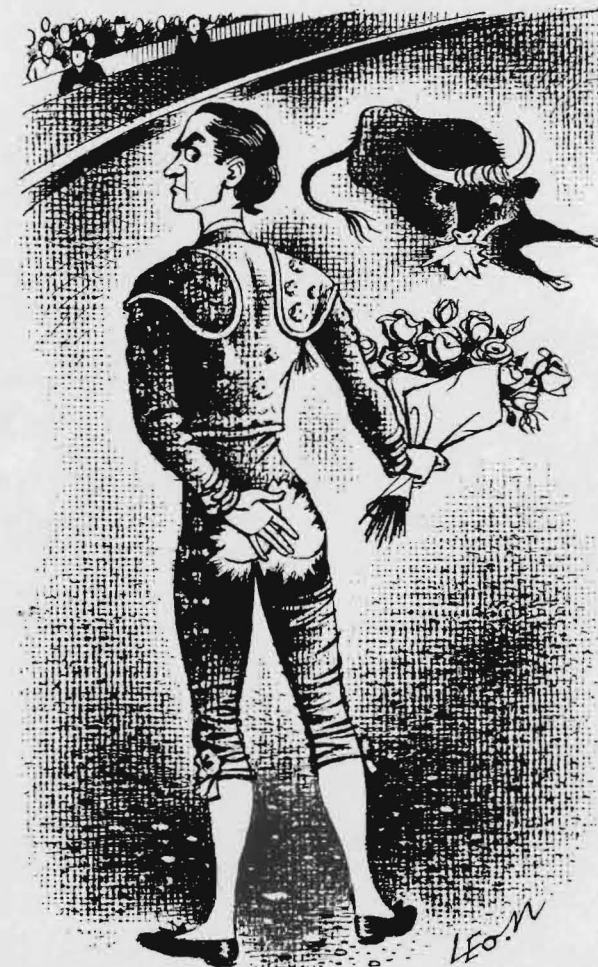
Before fighting the bull a matador gives his richly embroidered parade cape to some notability or to his loved one, and I understand that should he be killed in the ring the person holding the cape has to pay his funeral expenses.

At the fight I noticed that the female spectators overcame their extreme femininity sufficiently to drink tankards of sparkling iced ale.

On my third visit I went "backstage" and saw the chapel where the matadors pray before going into the ring, and also the elaborate hospital with its two operating tables where, after mishaps, they are patched up when they come out.

Before going to the bullfight I was told "You are English: whether it is first-class fight or *novillada*, you no like it anyway." Being English and familiar only with the British way of life, there were a number of things in Spain I no liked: the rifles and fixed bayonets which flashed past in the street; the nauseating flavour of fish and olive oil soup garnished with garlic; the doubtful purity of the water; the necessity to dispose of an occasional flea.

But of what importance are such trivialities compared with the dancing of Rosario, the flying leap of a *banderillero* over the horns of a charging bull, the strains of an Andalusian love-song, and a red flower nestling in the black lace of a mantilla, when they can be seen or heard in their natural setting, that country of gaiety, adventure and romance—*España!*



The bull did catch the novillero unaware . . .



Photo by G. D. C. Lyon (Dyestuffs Division)